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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/646,907	10/10/2000	Hidetaka Sakai	P107314-0001	6185

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07/25/2003

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EXAMINER

AKHAVANNIK, HUSSEIN

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 07/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/646,907

Applicant(s)

SAKAI ET AL.

Examiner

Hussein Akhavannik

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The disclosure is objected to because of the following informalities:

On page 2, line 24, "Disclosure of Invention" should be changed to "Summary of the Invention".

On page 4, line 11, "plan" should be changed to "plain".

On page 5, line 25, "best Mode for carrying out the Invention" should be changed to "Detailed Description of the Invention".

On page 15, line 10, "step 18" should be changed to "step 15" to correspond to figure 6.

On page 19, line 9, "step 2" should be changed to "step 22" to correspond to figure 9.

Appropriate correction is required.

Drawings

3. Figure 8 is objected to because reference number 21b should be changed to 22b and reference number 22b should be changed to 21b. The sensors should be opposite of their respective emitters, which is not correctly illustrated in figure 8.

Art Unit: 2621

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "21" and "22" have been used to designate both the first two steps of figure 9 and the sensors of figures 7 and 8. The reference numbers relating to the first two steps of figure 9 should be changed in the figure and the specification.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaks (U.S. Patent No. 5,615,760).

Referring to claim 1,

i. Measuring, with respect to each of true paper types previously prepared, a plurality of types of characteristic amounts by a plurality of types of sensors for each of a plurality of portions for examination is explained by Vaks in column 5, lines 10-33 and illustrated in figures 4-5. Vaks explains that the region R_A corresponds to the region where items are statistically likely to be acceptable coins. Vaks explains in column 4, lines 37-56 that the acceptable region is dependent on the three measured characteristic amounts including conductivity, thickness, and diameter of the currency. Though Vaks

Art Unit: 2621

does not explicitly explain the currency being a paper type, Vaks does explain that the currency validation system can be used to validate banknotes in column 1, lines 10-11. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the invention of Vaks, which validates coins, to validate banknotes (or paper currency) as Vaks suggests such an alternative.

ii. Analyzing principle components on the basis of obtained results of the measurement to find an equation of a straight line corresponding to the predetermined principle component is illustrated by Vaks in figure 5 by the straight lines:

a. $P_1/(S_1 * D_1) = M_1/(S_1 * D_1)$

b. $P_2/(S_2 * D_2) = M_2/(S_2 * D_2)$

c. $P_3/(S_3 * D_3) = M_3/(S_3 * D_3)$

The intersection of these three lines corresponds to the statistical mean, M, of the principle components measured for the true currency (column 5, lines 34-36).

iii. Producing reference data composed of a value relating to the predetermined principle component for the portion for examination on the basis of the found equation of the straight line is illustrated by Vaks in figure 5 by center point of the sphere, M, and the radius of the sphere, K (column 6, lines 1-8). The center point of the sphere, M, is determined by the intersection of equations of the straight lines explained by Vaks and is used as a base for a vector (explained in part v of this claim) to determine genuine coins. K is the radius of a sphere encompassing an acceptable coin region.

iv. Measuring, with respect to the paper types to be examined, the plurality of types of characteristic amounts by the plurality of types of sensors for each of the plurality of

Art Unit: 2621

portions for examination previously determined is illustrated by Vaks in figure 5 by point P. Vaks explains in column 6, lines 17-22 that the point P represents the measured properties of a coin using the same plurality of sensors used to create the acceptable region R_A .

v. Producing data for examination composed of a value relating to the predetermined principle component for the position for examination on the basis of obtained results of the measurement and the equation of the straight line is explained by Vaks in column 6, lines 1-11 and illustrated in figure 5 by the vector V . The vector V is created from the midpoint M (center of gravity) of the acceptable region to the point P of the measured characteristics of a suspect coin. The data for examination of the vector (straight line) corresponds to the magnitude of the vector calculated by Vaks in column 5, lines 52-55.

vi. Comparing the reference data and the data for examination to judge the truth of the paper type to be examined is explained by Vaks in column 6, lines 1-8. If the data for examination (magnitude of vector V) is less than K , then the coin is determined to fall in the acceptable region R_A (column 5, lines 56-67) and is determined to be valid.

7. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaks in view of Ishida et al (U.S. Patent No. 5,419,423).

Referring to claim 2, using a magnetic sensor and a light sensor as the plurality of sensors is not explicitly explained by Vaks. However, Ishida et al explain in column 4, lines 41-55 that a visible light sensor and a magnetic sensor are used in combination to determine whether a paper note is false or genuine. It is well-known in the art that paper currency typically contains magnetic ink that can be detected using a magnetic sensor. Furthermore, images present on

Art Unit: 2621

paper currency can be detected using a light sensor, as is also well-known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a magnetic sensor and a light sensor in order to determine genuine paper currency as both sensors can detect distinct patterns present on different types (or denominations) of bills.

Referring to claim 3, using a red-light sensor and an infrared light sensor as the plurality of sensors is not explicitly explained by Vaks. However, Ishida et al explain in column 7, lines 20-28 that the optical sensors, PxI and PxR, use infrared light and the optical sensor, PxC, uses red light. Using multiple wavelengths of light in order to determine a pattern on a suspect bill would increase the accuracy of the currency detection of Vaks, as more data is collected for each bill. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an infrared and red light sensor in the currency validation system of Vaks in order to increase the accuracy of the validation system.

Referring to claim 4, using a magnetic sensor, a red light sensor, and an infrared light sensor as the plurality of sensors corresponds to claim 2, wherein the light sensor comprises of red and infrared light sensors (as explained in claim 3).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nagase (U.S. Patent No. 6,125,986) – To exhibit determining the genuineness of a sheet by measuring characteristics of a sheet and converting the color characteristics measured as illustrated in figures 1, 3, and 4.

Art Unit: 2621

Sonoda et al (U.S. Patent No. 6,014,453) – To exhibit determining counterfeit currency by using a second set of axis for the measured data as illustrated in figure 8.

Nakajima et al (U.S. Patent No. 6,327,543) – To exhibit determining the truth of a paper type as explained in the abstract.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hussein Akhavannik whose telephone number is (703)306-4049. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H. Boudreau can be reached on (703)305-4706. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Hussein Akhavannik
July 22, 2003

H.A.



LEO BOUDREAU
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